

The Laws of Exponents

<http://www.mathsisfun.com/algebra/exponent-laws.html>

* Exponentiation is just repeated multiplication.

$$n^2 = 1 \times n \times n$$

* Negative exponentiation is just repeated division.

$$n^{-2} = 1 \div n \div n$$

* Any number raised to the first power is equal to itself.

$$n^1 = n$$

* Zero raised to any positive power is equal to zero.

$$0^n = 0; n > 0$$

* Any non-zero number raised to the power of 0 is equal to one.

$$n^0 = 1; n \neq 0$$

* The reciprocal of a number is the equivalent of raising that number to the power of -1.

$$\left(\frac{x}{y}\right)^{-1} = \frac{y}{x}$$

* To multiply terms with the same base, add the exponents.

$$n^2 \times n^3 = n^5$$

* To divide terms with the same base, subtract the exponents.

$$n^5 \div n^3 = n^2$$

* To raise a term with an exponent to a power, multiply the exponents.

$$(n^2)^3 = n^6$$

* Other laws:

$$(xy)^n = x^n \times y^n$$

$$\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}$$

$$n^{\frac{x}{y}} = \sqrt[y]{n^x} = \left(\sqrt[y]{n}\right)^x$$

* The square root of a number is the equivalent of raising that number to the power of 1/2.

$$\sqrt{n} = n^{\frac{1}{2}}$$

* The nth root of a number is the equivalent of raising that number to the power of 1/n.

$$\sqrt[n]{x} = x^{\frac{1}{n}}$$

* Raising a number to a fractional power:

$$n^{\frac{3}{4}} = \sqrt[4]{n^3}$$

***** DON'T EVER LET ME CATCH YOU DOING ANY OF THE FOLLOWING:**

$$n^3 + n^2 \neq n^5$$

$$n^3 - n^2 \neq n^1$$

$$5^n + 2^n \neq 7^n$$

$$5^n - 2^n \neq 3^n$$